

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) An isolated Nod-factor binding element comprising one or more isolated Nod-factor binding polypeptide (NFR polypeptide) having a specific Nod-factor binding property, or a functional fragment thereof, wherein the amino acid sequence of said NFR polypeptide is at least 60% identical to ~~any one of~~ SEQ ID No: 8, 15, or 25.
2. (Original) The Nod-factor binding element of claim 1, wherein said NFR polypeptide is NFR1, comprising the amino acid sequence selected from the group consisting of SEQ ID No: 24, 25, 52, and 54.
3. (Original) The Nod-factor binding element of claim 1, wherein the NFR polypeptide is NFR5 comprising an amino acid sequence selected from the group consisting of SEQ ID No: 8, 15, 32, 40, and 48.
4. (Original) The Nod-factor binding element of claim 1, comprising:
 - a. a NFR polypeptide, or a functional fragment thereof, wherein the amino acid sequence of said NFR polypeptide is at least 60% identical to SEQ ID No: 24 or 25; and
 - b. a NFR polypeptide or a functional fragment thereof, wherein the amino acid sequence of said NFR polypeptide is at least 60% identical to a sequence selected from the group consisting of SEQ ID No: 8, 15, and 32.
5. (Original) The Nod-factor binding element of claim 1, comprising:
 - a. the NFR polypeptide that is NFR1 or a functional fragment thereof, having the amino acid sequence selected from the group consisting of SEQ ID No: 24, 25, 52, and 54, and

b the NFR polypeptide that is NFR5 or a functional fragment thereof, having an amino acid sequence selected from the group consisting of SEQ ID No: 8, 15, 32, 40, and 48.

6. (Withdrawn) An isolated nucleic acid molecule encoding a NFR polypeptide according to claim 1, wherein the NFR amino acid sequence is at least 60% identical to either of SEQ ID No: 8, 15, or 25.

7. (Withdrawn) An isolated nucleic acid molecule encoding a NFR 1 polypeptide according to claim 2, comprising the amino acid sequence selected from the group consisting of SEQ ID No: 24, 25, 52, and 54.

8. (Withdrawn) An isolated nucleic acid molecule encoding a NFR 5 polypeptide according to claim 3, comprising an amino acid sequence selected from the group consisting of SEQ ID No; 8, 15, 32, 40, and 48.

9. (Withdrawn) An isolated nucleic acid molecule which encodes a Nod-factor binding polypeptide of a Nod-factor binding element, wherein said nucleic acid molecule hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID No: 6, 7, 11, 12, 21, 22, 23, 39, 47, 51, and 53 under stringency conditions of no less than about 1.0xSSC at 65° C.

10. (Withdrawn) An expression cassette comprising a nucleic acid molecule encoding an NFR polypeptide having a specific Nod-factor binding property, or a functional fragment thereof, having an amino acid sequence

- a) at least 60% identical to SEQ ID No: 8, 15, or 25;
- b) selected from the group consisting of SEQ ID No: 8, 15, 24, 25, 32, 40, 48, 52, and 54; or

c) encoded by a nucleic acid molecule that hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID No: 6, 7, 11, 12, 21, 22, 23, 39, 47, 51, and 53 under stringency conditions of no less than about 1.0xSSC at 65° C.

11. (Withdrawn) An expression cassette comprising a nucleic acid molecule according to claim 6.

12. (Withdrawn) The expression cassette of claim 10, wherein the nucleic acid molecule encoding a NFR polypeptide is operably linked to a transcriptional regulatory element.

13. (Withdrawn) A vector comprising the expression cassette of claim 12.

14. (Withdrawn) A cell that is stably transformed with the expression cassette of claim 12.

15. (Withdrawn) The cell according to claim 14, wherein said cell is a plant cell.

16. (Withdrawn) A method of producing a plant expressing a Nod-factor binding element, the method comprising introducing into the plant a transgenic expression cassette comprising a nucleic acid sequence encoding a NFR polypeptide or functional fragment thereof having an amino acid sequence

- a) selected from the group consisting of SEQ ID No: 8, 15, 24, 25, 32, 40, 48, 52, and 54;
- b) at least 60% identical to SEQ ID No: 8, 15, 25, or 32;
- c) comprising SEQ ID No: 8, 15, 24, 25, 32, 40, 48, 52, or 54; or
- d) encoded by a nucleic acid molecule that hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID No: 21, 22, 23, 51, and 53 under stringency conditions of no less than about 1.0xSSC at 65° C;

wherein the nucleic acid sequence is operably linked to a promoter, and selecting transgenic plants and their progeny expressing said NFR polypeptide.

17. (Withdrawn) The method of claim 16, wherein the transgenic expression cassette is introduced into the plant through a sexual cross.

18. (Withdrawn) The method of claim 16, wherein said promoter is a native or heterologous root specific promoter.

19. (Withdrawn) The method of claim 16, wherein said promoter is a native or heterologous constitutive promoter.

20. (Currently Amended, Withdrawn) A transgenic plant expressing one or more heterologous NFR polypeptides ~~produced~~ according to ~~the method of~~ claim 16.

21. (Withdrawn) The transgenic plant of claim 20, having a specific rhizobial strain recognition.

22. (Withdrawn) The transgenic plant of claim 20, wherein the plant is a non-nodulating dicotyledenous plant.

23. (Withdrawn) The transgenic plant of claim 22, wherein the plant is a non-nodulating monocotyledonous plant.

24. (Withdrawn) The transgenic plant of claim 23, wherein said monocotyledonous plant is a cereal.

25. (Withdrawn) A method for marker assisted breeding of *NFR* alleles, encoding variant Nod-factor binding polypeptides (NFR polypeptides), comprising the steps of:

- a. determining the nodulation frequency of legume plants expressing a variant NFR polypeptide having specific Nod-factor binding properties and having an amino acid sequence at least 60% identical to a sequence selected from the group consisting of SEQ ID No: 8, 15, 24, 25, 32, and
- b. identifying a DNA polymorphism at a locus genetically linked to or within the allele encoding said variant NFR polypeptide, and
- c. preparing a molecular market based on said DNA polymorphism, and
- d. using said molecular marker for the identification and selection of a plant carrying an *NFR* allele encoding said variant NFR polypeptide.

26. (Withdrawn) The method according to claim 27, wherein said variant NFR polypeptide has an amino acid sequence substantially similar to a sequence selected from the group consisting of SEQ ID No: 8, 15, 24, 25, 32, 40, 48, 52, and 54.

27. (Withdrawn) A plant selected according to the method of claim 24, carrying a *NFR* allele encoding a variant NFR polypeptide.

28. (Withdrawn) The method of claim 24 wherein the selected plant has enhanced nodulation frequency and/or root nodule occupancy and/or enhanced symbiotic nitrogen fixation ability relative to a control plant comprising a non-variant NFR allele.

29. (Withdrawn) The method according to claim 28, wherein said plant is a legume.